CLAIMS

1. A proximity detector, comprising:

a magnetic-field-to-voltage transducer for providing a magnetic field signal indicative of an ambient magnetic field;

a peak detector responsive to said magnetic field signal for providing a tracking signal which substantially follows at least a portion of said magnetic field signal, wherein said peak detector comprises:

a first digital-to-analog converter for providing a first output signal having a first step size;

a second digital-to-analog converter for providing a second output signal having a second step size larger than said first step size; and

a summation circuit coupled to said first and said second digital-to-analog converters for providing said tracking signal as a sum of said first and said second output signals.

2. The proximity detector of Claim 1, further including a too-far-behind comparator for providing a too-far-behind signal which changes state when said magnetic field signal varies from said tracking signal by a predetermined amount, wherein said tracking signal is controlled in response to said too-far-behind signal.

3. The proximity detector of Claim 2, wherein said peak detector further comprises:

a first counter for providing a first count signal to said first digital-to-analog converter; and

a second counter for providing a second count signal to said second digital-to-analog converter.

4. The proximity detector of Claim 3, wherein in response to a first state of said too-far-behind signal said second counter is stepped in association with a terminal count of said first

counter, and in response to a second state of said too-far-behind signal said second counter is also stepped .

5. The proximity detector of Claim 2, wherein said too-far-behind comparator is responsive to an offset signal that differs from said magnetic field signal by an offset amount.

6. The proximity detector of Claim 1, further including a POSCOMP comparator for providing a POSCOMP signal which changes state when said magnetic field signal varies from said tracking signal by a predetermined amount, wherein at least one of said tracking signal and said magnetic field signal is forced towards the other one of said tracking signal and said magnetic field signal in response to changes in state of said POSCOMP signal.

7. The proximity detector of Claim 6, wherein said POSCOMP comparator is responsive to a threshold signal that differs from said tracking signal by a predetermined amount.

8. The proximity detector of Claim 6, wherein said tracking signal is brought to substantially the same level as said magnetic field signal in response to changes in state of said POSCOMP signal.

9. The proximity detector of Claim 6, wherein said magnetic field signal is brought to substantially the same level as said tracking signal in response to changes in state of said POSCOMP signal.

10. A method for detecting a ferrous article comprising the steps of:

generating a magnetic field signal indicative of an ambient magnetic field;

generating a tracking signal which substantially follows at least a portion of said magnetic field signal;

generating a too-far-behind signal which changes state when said magnetic field signal varies from said tracking signal by a predetermined amount; and

changing step size of said tracking signal in response to transitions of said too-far-behind signal.

11. The method of Claim 10, wherein said changing step size comprises:

generating a first output signal having a first step size with a first digital-to-analog converter;

generating a second output signal having a second step size larger than said first step size with a second digital-to-analog converter; and

summing said first and said second output signals to provide said tracking signal.

12. The method of Claim 11, wherein said changing step size comprises:

counting with a first counter for providing a first count signal to said first digital-to-analog converter; and

counting with a second counter for providing a second count signal to said second digital-to-analog converter, wherein in response to a first state of said too-far-behind signal said second counter is stepped in association with a terminal count of said first counter, and in response to a second state of said too-far-behind signal said second counter is also stepped.

13. The method of Claim 10, further including

generating a POSCOMP signal which changes state when said magnetic field signal varies from said tracking signal by a predetermined amount; and

forcing at least one of said magnetic field signal and said tracking signal towards the other one of said magnetic field signal and said tracking in response to transitions of said POSCOMP signal.

14. The method of Claim 13, wherein said POSCOMP signal changes state when a threshold signal differs from said tracking signal by a predetermined amount.

15. The method of Claim 13, wherein said forcing step comprises bringing said tracking signal to substantially the same level as said magnetic field signal in response to transitions of said POSCOMP signal.

16. The method of Claim 13, wherein said forcing step comprises bringing said magnetic field signal to substantially the same level as said tracking signal in response to transitions of said POSCOMP signal.

17. The method of Claim 10, wherein said step of generating the tracking signal comprises:

comparing said magnetic field signal to said tracking signal to generate said POSCOMP signal;

counting with first and second counters in response to said POSCOMP signal to provide first and second count signals; and

converting said first and second count signals to said tracking signal.

18. The method of Claim 17 further comprising generating a threshold signal at a predetermined offset with respect to said tracking signal and using said threshold signal to generate said POSCOMP signal.

19. The method of Claim 18, wherein said tracking signal level and said threshold signal level are interchanged in response to transitions of said POSCOMP signal.